Ezra Truneh

Design Portfolio

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About me

I'm an aspiring UX designer currently double majoring in Information Science and Psychology at Cornell University, and I will be graduating in May 2019. I am further pursuing a one year Master of Professional Studies degree within Cornell Information Science, where I will be concentrating in User Experience.

I have always believed that before we can properly design for humans, we must first understand the human mind. As a student of Psychology, I've learned about the perceptual phenomena and processes that guide our experience. As a student of Information Science, I've learned important tools and methods for creating human-centered design.

WeCycle: A Recycling App

Although many individuals these days are aware of the benefits of recycling, they lack motivation and knowledge to do so, and fail to recognize the collective impact that individuals can have on the environment. This project seeks to tackle this problem by increasing motivation and supplementing knowledge through gamifying recycling with a mobile app. Real life problems this project tackles include the following:

- Encouraging users to improve their recycling habits over time.
- Having a lasting impact on user attitudes towards recycling.
- Improving users' feelings of connectedness with like-minded individuals.
- Helping users contextualize their impact with meaningful visualizations.
- Providing users with accessible knowledge on what is recyclable.

My Role

UI/UX design, low and high fidelity prototyping, user research, UX feedback studies and data analysis

Tools

Balsamiq, Figma, Invision

WeCycle: A Recycling App

WeCycle: A Recycling App

Ezra Truneh, Annie Zhang, Stefan Sykes, Shauna Cheatham, Jane Chen
INFO 3450 | Fall 2018

Background

- College students are generally unmotivated to recycle.
- There are few easily accessible resources that teach individuals about recycling.
- Individuals struggle to contextualize their environmental impact and reduce their carbon footprint.

Motivation

- Visualizations help individuals conceptualize their environmental impact more easily.
- Gamifying recycling can help individuals who lack motivation to recycle on their own.

Project Goals

- Encourage users to improve their recycling habits over time.
- Have a lasting impact on user attitudes towards recycling.
- Help users contextualize their impact with meaningful visualizations.
- Provide users with accessible knowledge on what is recyclable.

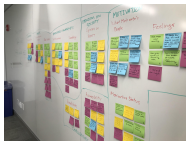
Design Process

Stage 5: User Evaluation and Iteration

At the time of producing this poster, we are in the process of conducting usability tests. We are using various evaluative metrics, such as efficiency, learnability, memorability, satisfaction, and social connectedness to determine if our app provides an useful, intuitive, and engaging experience for our users.

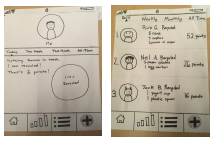
Stage 1: Concept

After interviewing five college students who are unmotivated recyclers, we created a diagram full of their opinions and stories related to our problem. After constructing a persona and ideating, we finally settled on designing an app that would uniquely gamify recycling.



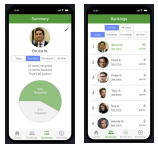
Affinity diagrams

Stages 2 - 4: Low - High Fidelity Prototypes



Low Fidelity Paper Prototype

Mid-Fidelity Balsamiq Prototype



High-Fidelity InVision Prototype

Paper prototype: we sketched out preliminary screens for our design.
Balsamiq prototype: we constructed a wire-frame prototype and mapped out basic user flow.
InVision prototype: we added details, addressed heuristic violations, and fleshed out the features of our app.

Methods

Contextual Interviews
Five college students were asked about their recycling habits and motivation. They admitted to being unmotivated to recycle, lacking knowledge on what can be recycled, and feeling that they aren't making an impact. Activity notes were produced and analyzed to construct our persona.

Paper Prototype Evaluation
Five more college students who had not been interviewed already were asked to use our paper prototype for 20 minutes and evaluate its design.

Heuristics Analysis
All five team members used our Balsamiq prototype to cite violations of Nielsen's heuristics. The violations were listed in a spreadsheet and analyzed for severity and solutions in order to be fixed for our InVision prototype.

Usability Testing
Finally, five more college students were asked to test our InVision prototype with three distinct tasks to assess usability.

Key Findings and Design Decisions

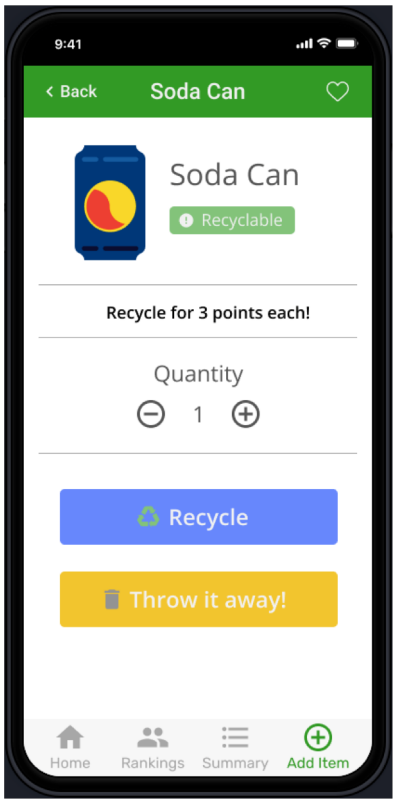
Findings	Design Decisions
Initial Interview (Stages 1-2)	
Habits	Positive reinforcement
Motivation	Individual impact; Competition
Knowledge+Awareness	What to recycle
Convenience+Accessibility	Low-cost; Ease of use
Paper Prototype (Stages 2-4)	
Smooth/reliable functionality	Reduce excessive button presses
Emphasize add button	Easily interpreted values and data visualization
Social aspect of visualization	

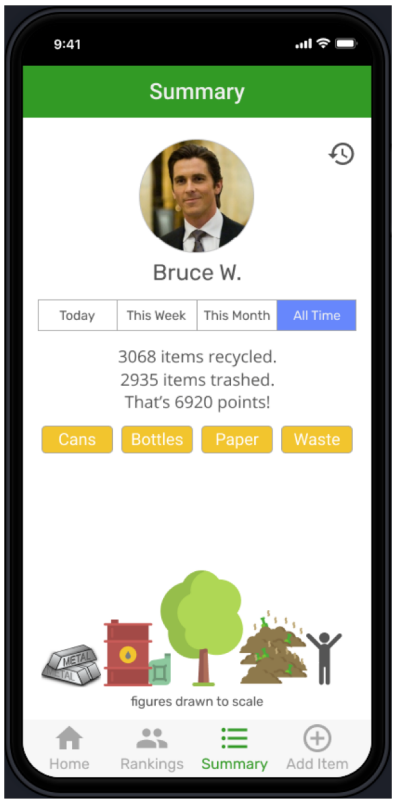
User Evaluation and Iteration (Stage 5) (collected data so far)

- Excessive blank space on Add Item page
- Item discovery is heavily tied to Add Item functionality
- Details of the point system are unclear to users
- Users are hesitant to log trashed items
- User thought Edit Entries button would edit Profile
- Lack of pie chart visualization on All Time seems inconsistent

WeCycle: A Recycling App

Low Fidelity





High Fidelity

Robotic hand for American Sign Language

Regardless of what age a person is, learning sign language can reap a number of benefits for them and the people around them. For babies and toddlers, sign language allows them to nonverbally communicate with their parents. At an elementary or high school level, learning American Sign Language (ASL) has the same mental and social advantages as being bilingual. Additionally, at any age, knowing ASL mitigates the gap between both the hearing and deaf communities. Therefore, society as a whole could benefit from learning ASL.

To help with the learning process, my team and I set out to rapidly prototype a robotic hand capable of producing sign language for the digits 0-9.

My Role

Initial CAD prototyping, 3D printing, circuit design, microcontroller coding

Tools

Autodesk Fusion 360, Particle Photon microcontroller and breadboard, Prusa MK3 3D printer

Robotic hand for ASL

Designing Robotic Hand for ASL

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introduction

Regardless of what age a person is, learning sign language can reap many benefits for them:

For babies & toddlers, sign language serves as a form of non-verbal communication that can be used with their parents.

At any age, learning sign language can help to mitigate the gap between the hearing and the deaf communities.

From elementary to high school, learning sign language has the same mental & social benefits as being bilingual. Many schools are considering having American Sign Language (ASL) fulfill their foreign language requirement because of its unique grammar structure.

problem

While ASL can be beneficial, the process of learning it can be difficult. Currently, several issues may interfere with an individual wanting to learn ASL, including:

- *classes are unavailable*
- *lack of interpreters / no one-on-one education*
- *not interactive or visual enough*
- *retention*

goals

Our main goal is to simplify the learning process and make ASL more accessible. We hope to accomplish this by supplementing existing human interpreters with a prototype that will take inputted numbers and produce a physical representation of those numbers in ASL. Using this in classes will make them more interactive, and showcase the visual nature of the language. The prototype could be used in areas with demand for ASL education but with fewer interpreters or classes available.

design

Our prototype consists of two thematic parts: a physical representation of a hand & an interface.

The Hand:

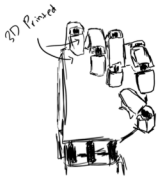
Made up of 28 separate 3D-printed parts, including:
- *5 segment pieces for each of the four fingers*
- *4 segment pieces for the thumb*
- *2 pieces for the palm*
- *2 pieces for the forearm*

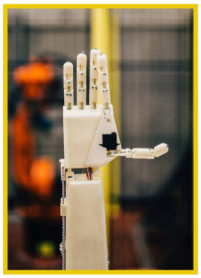
Each finger segment would be connected through the front with nano-cord to simulate contraction and through the back with elastic string to simulate extension.

The Interface:

Consists of a laser-printed box that will rest underneath the hand and contain all the parts needed for movement of the hand, such as:
- *5 servo motors that will wind up the strings to simulate movement*
- *Breadboard & wiring to move the servos*

There will also be a keypad on the box which is where the user can input numbers.





implementation

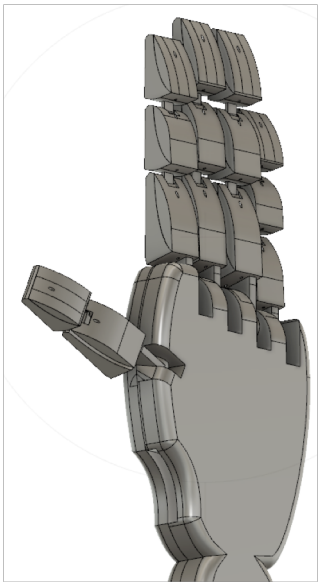
Our plan for creating this prototype was first making a single finger that moved with the servo motor, since this could be replicated multiple times for the hand. This first step including creating the finger segments in Fusion, printing them, and running strings through holes placed thoughout them. Then we wrote code that would rotate the servo enough to contract and extend the finger.

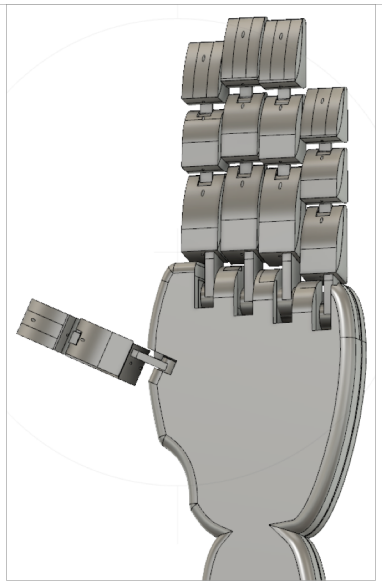
Once we completed this task, we began work on the palm, forearm, and box. We worked on the 3D-printing, laser cutting, and wiring concurrently to maximize time for the integration of all the parts. We also spent additional time on movement for the thumb, which is at angle.

further steps

While this prototype definitely accomplishes our goal of of physically representing the ASL numbers, we do understand that it is only the first step towards overall improvement of ASL education. In future iterations, we could expand the prototype by:

- *Pre-programming the entire alphabet, making it possible for the device to use ASL fingerspelling—a form of sign language where words are communicated with their individuals letters*
- *Pre-programming words or short phrases*
- *Having a pair of robotic hands for more complex words and phrases*
- *Interpret words & phrases from speech directly instead of through a manual input*





CU Jazz website redesign

Client: Cornell University Jazz Program

Need: Effective communication of jazz program information to students and faculty.

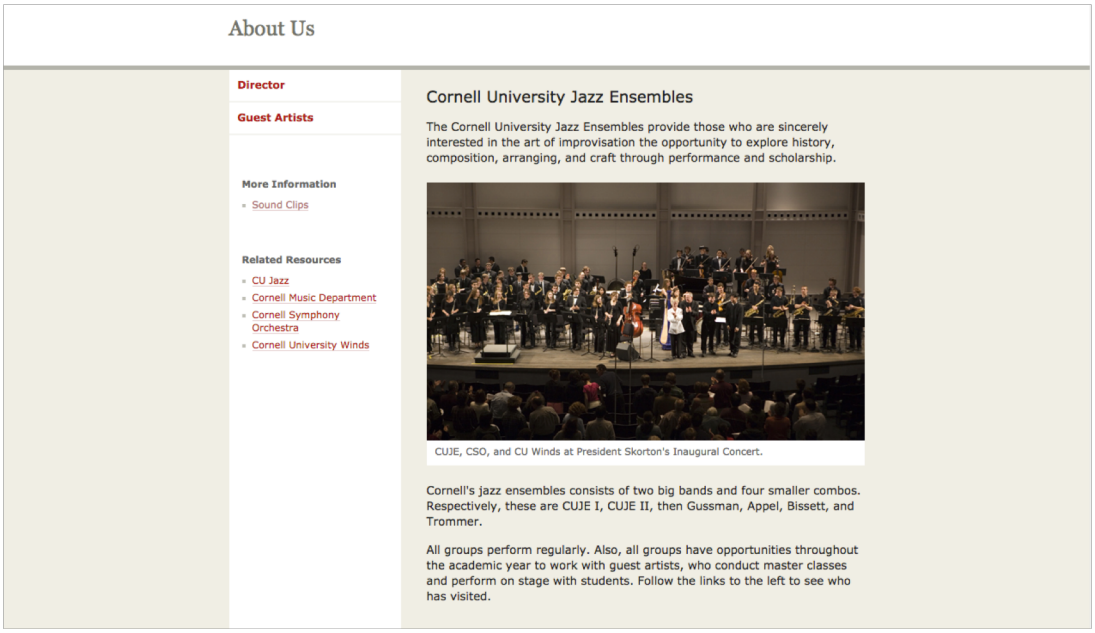
Problem: Existing website's layout and design was not well suited to target audience.

My team and I set out to revamp the CU Jazz website by employing the human-centered design process. We reached out to members of the target audience to determine their needs, created initial sketches and received feedback from the audience, and used the data we obtained to design and construct our client's website. We used further feedback from both the client and users to iteratively improve upon our design at all stages.

Additionally implemented: SQLite database to keep track of upcoming events, administrator login with special database privileges

CU Jazz website redesign

Before



After